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PROTO-INTERIOR SALISH VOWELS¹

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0. Interior Salish languages have been noted by many² as a distinctive subgroup of the Salish family. Phonological systems are nearly identical, and cognates abound. Although their grammatical structures are quite distinct, the interior languages have more in common with each other than any one has with the non-interior languages (i.e., Coast Salish, Tillamook, and Bella Coola). The same is true of vocabularies.

Seven or eight distinct languages comprise Interior Salish. (1) Lillooet, (2) Shuswap, and (3) Thompson are spoken in south central British Columbia. (4) Colville is spoken by the Okanogan, Southern Okanogan, Methow, Nespelem, Sanpoil, Colville, and Lakes bands to the south of the former in British Columbia and in Okanogan and Ferry Counties in Washington. (5) Columbian is spoken by Indians who formerly lived along the Columbia River from just below the mouth of the Methow River to approximately the present community of Vantage, and along the Wenatchee River (with hunting and gathering territories well into the Cascade Mountains on the west and the

Columbia Basin on the east. (6) Spokane, which remains unstudied, is spoken along the Spokane River, with a probably closely related group on the Colville River near Chewelah. It is not yet known how distinct Spokane is from the next language to the east, (7) Kalispel-Flathead. The Kalispel and the Flathead tribes, plus the smaller Pend d'Oreille group, speak nearly identical dialects of one language. Their former territory extended from Pend d'Oreille County in Washington as far into Montana as Helena. (8) Coeur d'Alene, now nearly extinct (it is the Interior Salish language with the fewest remaining speakers), was spoken in the area west and south of Spokane.³

As stated, the phonological systems of these languages are nearly identical. For consonants, all have p p' t c c' k' k'w q q' q'w q'w' ? s x'w x' x'w' h m m' n n' l l' y y' w w'. All but Cr have additionally λ' (which there has merged with t'), and all but Li, Sh, and Th have t' (which in these three has merged with λ'). Sp, Ka, and Cr have č č' š which correspond regularly to k k' x respectively in Li, Sh, Th, Cv, and Cm (it should be noted that in at least Cm and Cv c c' s are more commonly alveopalatal than alveolar, thus sounding more like the Sp, Ka, Cr č č' š series than the cognate c c' s series). In addition, Cm, Cv, Sp, Cr have r r' (which have merged with l l' elsewhere); Cr has b d j g'w corresponding to respectively p y y' w elsewhere; Li, Th, Cv, Cm, Cr have pharyngeals ʕ ʕ' ʕ'w ʕ'w', and Cm has an additional voiceless pair ʔ ʔ'w, all of which have disappeared (or nearly so) from Ka; Sh has ɣ; Li has z. With few and irregular exceptions other than those noted, like consonants are cognate in all languages.

Vowel systems are also similar, but this time cognacy is not so

straightforward. It is these divergencies with which this paper will deal. Because of availability of data, and because these two have developed the Proto-Salish vowel systems in two different directions typical of one or another IS language, Cm and Cr were used as the basis of comparison for hypothesizing the reconstructed vowel system of Proto-Interior Salish. Cognates from Ka, Sp, and Cv are included when available.⁴ Although data are available on Ka from Vogt's work, no consistent attempt was made to incorporate Ka material in this paper because of the added complexities and amount of data which would have had to be dealt with. Since cognates from CS languages are fewer and more difficult to locate, little attempt was made at this time to compare Cm or Cr extensively with any coast language (although a few correspondences from Kinkade's field notes on Upper Chehalis (Ch) are given). An unexpected side result of these comparisons was the reconstruction of a PIS ablaut system, which will be discussed below. It is believed that the vowel system reconstructed here will prove to be derivable with few emendations into the other IS languages.

1. Cr vowels⁵ are i ɪ e ε a ɔ u ə. Of these, ɪ, e, and ə are marginal in that ɪ and e are primarily positional variants of i, and ə is principally epenthetic or the unstressed member of alternating pairs í-ə, é-ə, á-ə. ɔ also seems to be marginal and infrequent, but its status is unclear (it is commonly a positional variant of u). This leaves i ε a u as the basic vowels of Cr, and of these a has a somewhat restricted distribution.

Cm has i a u ə. ɔ has been noted occasionally, but should probably not be considered primary. This seems to be the more conservative lan-

guage phonologically, and we reconstruct these same four vowels for PIS, although not all correspondences are one to one (it is not possible to detect patterns of change from a PIS system containing the same vowels as Cr into Cm; the reverse is true, and is the assumption of this paper).

Ka, according to Vogt,⁶ has i e a o u stressed, and the same (short and long) plus ə unstressed.

2. It was noted already in 1926 by Boas and Haeberlin that some IS languages had shifted a to i: "The most important vowel shift is that from a to i (e) in the inland dialects. . . . The most frequent a-i shift is that in which Lill, Thom, Shus, Spok, and Clum have a while Okan, SPoi, Clvi, Lake, Kali, Pd'O, and Cd'A have i (e)"⁷ They also noted that there are exceptions to this shift: "In spite of a number of exceptions this soundshift is remarkably constant. It must be remembered that in many cases an i or a remains in all the dialects. It is impossible to determine from our material why in these cases the vowel has not been affected by the a-i change."⁸ The majority of these exceptions will be explained below.

Another problem encountered by Boas and Haeberlin was what they believed was an opposite shift: "There are a number of words which show in the inland dialects an a-i sound-shift which runs in an opposite direction to that described above. That is to say those dialects which have a in the first type of a-i shift have i (e) in this second type and vice versa."⁹ The difficulty with this particular shift is that many of the vowels are apparently misrecorded. All examples cited have been recorded in Cm by Kinkade as having ə (often of a rather high variety, but quite distinct

from i), and in Cr by Sloat as having ε. Assuming, then, that all of this set have an original *ə, the correspondences no longer contradict the a-i shift, but are simply a separate sound change.

This is not meant to imply, however, that there are no unexplained exceptions to the sound shifts we will set up. There are, in fact, a number of these. Some of these exceptions are undoubtedly due to borrowing, but the extent of these cannot at present be determined. Some of the exceptions are probably due to analogic, assimilatory, or other changes within one or another language. Additional data from other IS languages may clarify some of the irregularities. For example, Ka also has two front vowels, i e, which correspond regularly to patterns given below: *a > Ka e (Cr i), *i > Ka i (Cr i), *ə > Ka i (usually; Cr ε). Since the Ka changes do not quite match those of Cr, a careful comparison of irregular forms with Ka cognates, when these can be found, might be helpful.

Reichard also discusses some of these problems in her Coeur d'Alene,¹⁰ but took up what turn out to be several separate issues, and did not provide a great deal of clarification. Another attempt at explaining these questions occurs in her "Comparison of five Salish languages."¹¹ This seems to be clearer than her earlier work because she had more comparative data to work with. Many problems remain unsolved, however, and what we find to be separate issues are again combined and confused. Most of her good comparisons in this article are between Cr and Ka; but since Ka not only reflects vowel changes similar to those in Cr, with some special problems of its own, it was not the best language to begin comparisons with. Cm seems better suited for this purpose. Many of Reichard's explanations

are valid, however, and often conform to various points discussed below.

3. We hypothesize that PIS had a four-vowel system: *i *u *ə *a. This system has fewer vowels than Cr, but we believe that all Cr vowels can be regularly derived from them. Irregular correspondences are relatively few in number, and do not involve vowels that are not elsewhere derivable by regular means.

In addition to hypothesizing these four PIS vowels, we must recognize three types of the ə. These are functionally rather than qualitatively different. The first is an independent, full-grade vowel (although it could ultimately have been derived in the same way as the second, with the full-grade form having been lost, leaving only the ə-grade form, which then developed its own, new reduced grade; if this is the case, then PIS would only have three vowels plus one ablaut vowel); instances of this *ə are numerous. The second *ə is a secondary ablaut grade of the other three vowels, although Cr has modified this pattern by eliminating the *u-ə ablaut in favor of u-u (i.e., no ablaut). The third is both structurally and functionally different. In effect, it is epenthetic, breaking up certain consonant clusters (particularly those involving resonants), and is largely predictable.¹² It is quite unstable, appearing in certain characteristic positions in slow speech, but may occur in other positions (or not at all) in allegro speech.

The most characteristic developments of PIS vowels may be summarized as follows. Cm retained all vowels unchanged, except that *ə before y or y became i and *ə before or between labials and labialized consonants became u. Cr retained *u and *i, except that *i was lowered to e and *u

to ɔ before r, uvulars, and pharyngeals. *a remained, and *ə became Cr a before these same back consonants. Otherwise *a became Cr i (but still turns up as Cr a if a suffix containing a back consonant occurs on a form) and *ə became Cr ɛ. Epenthetic *ə was unchanged in both languages.

A distinction must be made between stressed and unstressed vowels in these developments. The above changes apply primarily to stressed vowels. Stress in Salish is unstable, however, and can shift from one morpheme to another (although not randomly), moving particularly toward the end of the word. There is a tendency for some occurrences of vowels to change quality when they lose stress; in particular a often becomes ə (which becomes Cr ɛ), and ə is sometimes lost completely (and in Upper Chehalis é becomes unstressed a when stress is shifted). What appear to be irregular correspondences are often quite regular when stress shifts are taken into account. For example, Cm á may correspond to Cr ɛ if the latter is unstressed. But two explanations of this correspondence seem to be possible: (1) If a PIS form had *a, this vowel could alternate with unstressed *ə. *a could become either Cr a or Cr i, and *ə would become Cr ɛ. If Cm then retained (or recreated the form with á, it would then correspond to Cr ɛ. Because stress is movable, four possible stress-pattern correspondences can occur: Cm á/Cr á or í, Cm á/Cr ɛ, Cm ə/Cr á or í, and Cm ə/Cr ɛ. (And since the de-stressed vowel need not change quality, correspondences with Cm ă and Cr ă or Cr ĭ can also occur.) (2) PIS *a became Cr i, both stressed and unstressed, then (pre-)Cr ĭ became ɛ (this possibility would then underlie the fairly common alternation of Cr í with ɛ). Since there are é-ə alternations in Cr as well as í-ɛ, some explanation of this Cr ə is necessary,

and simple alternation of all PIS vowels with *ǝ, which became Cr ε, will not quite work. This stressed Cr é would still come from PIS *é, but Cr ǝ would be retained unchanged.¹³ The lack of Cr ú-ǝ alternations could be taken as further evidence for this unsymmetrical set of sound shifts.

Details and known instances of vowel developments follow. Minor variants are included and explained here, and correspondences that do not fit regular patterns are given. For each correspondence the Cm form is given first, then the Cr, with known Ka, Sp, Cv, and Ch¹⁴ cognates following in parentheses. The Cm and Cr forms are separated by a diagonal bar; the meaning follows the Cr form if the same for both stems, but if the meanings are different each is given following the appropriate form (and the bar follows the Cm meaning). Ordinarily only the root is given. If this cannot be isolated with certainty, however, the whole stem or word, or as much as can be isolated with certainty, is given. Note that ? between the vowel and a following consonant does not affect the development of the vowel.

PIS *a

A. Becomes Cm a, Cr a

1. before r, uvulars, and pharyngeals (hereafter referred to as back consonants)(whether immediately following or not):

spápq-+ca? weasel/s-pápq-+cε? ermine (Ka pápq+ce? weasel); ?ásq^wsa?/?ásq^w son (Ka sq^wse?, Sp, Cv sq^wsí?); ?áyəx^wt/?áyx^w(t) tired (Ka ?aíx^wt get tired); sɣax^wísɣa?/wesɣax robin; k^wár-/k^wár yellow (Ka k^wa·lí?, Cv k^wrí?); wárk/wárč frog (Cv swarákxən); carís/cálus kingfisher (Cv cərís, Fl calís) [the l in the Cr form shows that it is

borrowed from Ka, which has changed r to l; the vowel correspondence holds, however]; wərɰark-átp tall sunflower/s-gʷárpəm flower; ʔaʔʔáqs shocks of hay/ʔáq bushy stuff lies (Ka ʔáq lay down something); ɣáq-/ɣáq pay, reward (Ka ɣáq); náʔq/náʔq rot, rotten (Ka náq); páxt wise, smart/páx be wise, think, reflect (Ka páx think, deliberate); páx-scratch, scrape/páx rub on rough surface; wəxt-ált child, baby/gʷáx(t) be young; ʔáxt/ʔáx(t) friend, partner (Ka ʔáxt, Cv s-ʔáxt); wáxp itch/wáʔx smart; sáʔxʷ melt/sáʔx dissolve; ʔasxáʔxaʔ/nasxáʔx father-in-law (Me sxáʔxaʔ); scáʔqʷ summer, July/s-cáʔqʷ fall, autumn (Me scaʔáqʷ summer); táxqʷ get away/táxqʷ foot slips (Ka táxqʷ slip); caḥ-/cár scream (Ka caá holler, Cv cáḥ-); yáʔ gather, round up/yár assemble, be many, gather, crowd (Ka iyáʔ-, yáa- gather); ɣáʔ- fan, blow/ɣár fan (Ka ɣá cool ?); in suffixes -áʔqʷ/-áʔqʷ tree, long object; -áʔqʷp/-áʔqʷp throat; -átp/-átp tree, plant (the Cr form is found only preceding -áʔqʷ, otherwise -ítp occurs); -atqíxʷ smell/-atqíxʷ breath; -atqáyt/-atqáwt shoulder; -ápqən/-ápqən back of head; -ásqʔ/-ásqʔ day; -áʔqs/-áʔqs clothes; -áxən/-áxən arm.

2. for indeterminate reasons:

- a. xʷám-/xʷám (Cr form uncertain) roan colored (Ka xʷém paint red ?); qʷám- good, feel good/qʷám (Cr form uncertain) be pleasant, comfortable, pleasing, fascinating; scám/s-cám bone (Ka, Sp scóm, Cv scím); cǎw/cǎw wash (Ka céʔu); ɣátɣat/xʷát-xʷat duck (the first vowel conforms to pattern 1 above, but the second is irregular) (Cv xʷátɣat, Ch ɣátɣt); mácp/mácp bee; páʔs/páʔs come to surface; cáncən/cáncən grasshopper (Me ccáncən); máttuxʷ housefly/həməttəmʂ fly, insect,

maggot (Ka, Sp, Cv xamát+tən fly); máʔí water gets warm/máʔí come to boil (Ka máí bubble); káy/čáy hard, stiff, strong; swáwaʔ/s-wáʔ cougar (Cv swáʔ, Ch swá·waʔ).

b. borrowings. ʔáns/ʔánš angel; cáynəmən/cánmən Chinaman; lawán/lawán oats; lapták/patáq potato (Me lapták); n-təl-ánaʔ/?en-təláneʔ wolf (Ka nteláneʔ) [only the Cr form is borrowed, probably from Ka].

B. Becomes Cm ə, Cr á when unstressed in Cm and stressed in Cr:

mətús/mátus kidney (Ch méts kidney, matós-s his kidney); məcútt/mác-u+tt pus (Me məcá+tt); sɣwəlákən/s-xwal-ísčən big buck.

C. Becomes Cm a, Cr ε

1. when stressed and following *ʔ:

hác-/RÉC tie (Ka aác, Cv ʔác); háy-/RÉY angry (Ka ʔáymti he's mad, Cv ʔáymt angry). (But cf. hǎʔi/Ríd hot; sháhəntk/s-ríhənt Canada goose.)

2. when stressed in Cm but unstressed in Cr (these are not exactly cognate vowels; *a when unstressed would have become *ə in PIS, and this vowel developed regularly to Cr ε--see page 7 above):

s-k-tám-qən/s-təm-ílgwəs relative; swát/ségwet who (Ka suwét, Ch wá·); kaʔtás/číʔ+əs three (Ka, Sp čəʔ+é(s), Cv kəʔ+ís, Ch čǎʔ+e); xəmán/šémən enemy (Ka, Sp šəmən, Cv xəmín); sál-/ʔésəl two (Ka, Sp ʔésəl, Cv ʔəsíl, Ch sá·le); xəwál/hən-šégwel road, trail (Ka šuʔšuwét, Ch šəwt); cq-át+p/cáq-ε+p fir; mət'káyaʔ/mítčedeʔ blood (Me mtkíyaʔ); xəláxʷ/xélexʷ tooth (Ka, Sp xaléxʷ); in suffixes -ələwás chest/-ílgwəs heart, stomach.

3. when unstressed before final ʔ (usually the suffix -aʔ/-εʔ):

ccəmə-/cicém-ε? small (pl.) (Ka +ccímet); k'wúska- haunt/k'wúsčə? ghost,
haunt (Ka k'wúsčə? ghost); ?úcqa?/?ácqə? go out (Ka, Sp ?ócqə?, Cv
 ?ácqa?); k'íkwa?/c'ík-w-ε? left (hand); kk'íta?/č'ít-ε? near (Ka č'ítč'ə?);
 ?ítxwa? black camas/?étxwə? camas (Ka, Sp ?ítxwə? cooked camas, Cv
 ?ítxwa? camas); spápq-+ca? weasel/s-pápq-+čə? ermine (Ka pápq+čə?
weasel); páca?/p'ice? root-digger; pú'íya/pú'íyε? gopher; p'ékwa?/p'ék'wíε?
ball; táwən-+ca?/t'íwun-+čə? doe (Ch tá·wn+čə); t'íkwa?/t'ík'wε? father's
sister; st'íya?/s-t'éde? hay, tall grass; k'íya?/t'éde? canoe (Ka, Sp
 k'iyé?, Cv k'íí?); támka?/s-t-tím-čə? daughter (Ka stəmčə?élt, Sp, Cv
 stəmke?élt); tána?/t'íne? ear (Ka, Sp t'ene?, Cv t'ínə?); tatúpa? great-
grandchild, great-grandparent/túpye? great-grandfather (Me. túpa? great-
grandparent); stúlca?/s-tún+čə? mule deer (Cv stélca?sqáxa? mule);
 n-təl-ána?/?ən-təláne? wolf (Ka nteláne? glutton); sínca?/sínce?
man's younger brother (Ka, Sp sínce?, Cv sínca?); cáya?/cicíyε?
woman's younger sister; x'wiyápa?/?ε-cuxw-cuxw-wəyípe? rose hips;
 c'ésəlúsa?/s-š-cəs-lúse? hail (Ka ssa·lúse?); kk'íya?/čič'éyε? mother's
mother, woman's daughter's child (Ka čič'iyé? mother's mother, Ch k'ey
grandmother); yúkwa? woman's older brother/yúk'wε? woman's younger
brother; qqána? father's mother, woman's son's child/q'íne? father's
mother (Ka q'éne? father's mother, Cv qáqəna? son's child); qápəxwa?
nut/q'íp'xwε? walnut (Ch kapóxw hazelnut); sxxápa? father's father,
man's son's child/x'ípe? father's father, son's child (Ka sxépe?
uncle); sqwəsqwésa? baby/s-qwás-qwése? child; q'wəcəwáya?/q'wuq'wəc'wíyε?
chipmunk (Ka q'wəq'wəc'wé); in suffixes -ána?/-íne? ear; -ápəla?/-ípie?
handle; -íca? blanket, skin, hide/-íčə? all around, all over; -á+ca?/

-íʔɛʔ body.

4. in most borrowings:

qayú·s/qeyíʔus Cayuse; sámaʔ Spaniard, Frenchman/hémeʔ Frenchman;
ʔápəls/ʔépls apples (Me ʔápls); suyápənuʔ/suyépəməʔ white man (Ka
suyápi); súlcas/sóltəs soldier; laputáy/lebuté(m) bottle (Ka ləpu·te,
Me laputáy).

5. for indeterminate reasons:

a. (some or all of these probably reflect different ablaut grades)

ʔáwt- accompany, oppose, behind, back part/ʔéw(t) oppose (Ka ʔeut-
oppose, Ch ʔáw- behind); ʔám(t)-/ʔém(t) feed (Ka ʔém(t)-, Ch ʔóm
give food); ʔám- wait/ʔémut one sits (Ka ʔem(ú)t- sit, Me ʔəmútʔ
sit (sg.), Ch ʔá·mqʔ wait); táw-/téʔw buy (Ka téu buy, sell, Me téw);
yáʔxʔw- cover/yéʔxʔw cover with material; wáʔ-/gʔéʔ tilt, slope; ʔáʔxʔw
hang down/qéʔxʔw hook over or into (Ka ʔalʔxʔw hang up high on hook);
myáʔ/mıyéʔ too, very; ʔáʔp get on top of/qéʔp go up incline; máy-
tell/méyʔ report (Ka méi show, teach, tell); táʔw- scratch/tékʔw pierce
with fine-pointed object, fork, barb, spike.

b. unstressed in Cm but stressed in Cr (the Cm a in these forms may
be from an underlying é, which would then correspond to Cr é). pam-/
béʔm buzz, rumble; ʔaw- split/qéʔw break stiff object (Ka ʔaʔú break);
xap-/xép pile flat objects; ʔalán/čél tree bark (Ka číʔléʔxʔw, Ch
ʔá·lnʔ); waxʔíʔíʔaʔ icicle/gʔéxʔw plural objects hang.

c. when unstressed in both languages. wawaʔíʔkʔ/wəw(ə)y-íʔt poor-
will; ʔaʔkʔwíʔxʔ/təʔkʔwíʔš shaman (Me ʔaʔkʔwíʔxʔ); (s)kaʔáʔp parent of
deceased spouse/s-čéʔíʔlup last living relative; in suffixes -atníwt/

-ɛ+níw' alongside.

d. məlá'yən/mé'le? bait; s-k-tá't/s-č-témt dew, light fog.

- D. Becomes Cm ə, Cr í when unstressed in Cm and stressed in Cr (these could equally well be derived from PIS *i)

kəm- grab a handful/čím grab some; mə+káya?/mít'čede? blood (Cv m+kiʔəʔ);

in suffixes -ələwás chest/-ílgʷəs heart, stomach.

- E. Becomes Cm a, Cr i

1. regularly in all other instances than the above:

sápən/sípən daughter-in-law (Me sípən); xʷiyápa?/ʔe-cuxʷ-cuxʷ-wəy'ípe? rose hips; sxxápa? father's father, man's son's child/x'ípe? father's father, son's child (Ka sxépe? uncle); +káp bucket, kettle/+ičíp bucket (Ka +čép kettle); ʔáp-/ʔíp (also ʔáp before back consonants) wipe (Ka ʔép wipe off, Ch ʔáp- rub, pet); sláp wood, stick/líp wood (Ka lúkʷ wood?, Cv slíp wood); ʔápəxʷa? nut/q'ípʷə? walnut (Ch kápóxʷ hazelnut); məryám medicine/marím treat for illness (Ka mə·liye medicine, Fl malyé medicine, Cv mərímsəm medicine); yilám- run (pl.)/dilím gallop, go on fours; lám̄t glad, happy/lí̄m(t) be glad, thankful, pleased (Ka lé̄mt glad, grateful); támka?/s-t-tím-čə? daughter (Ka stəmčə?élt, Sp, Cv stəmke?élt); stám/s-tím what (Ch tám); smiyáw/s-mlyíw coyote; táwən-+ca?/tíwun-+cə? doe (Ch tá·wn+ce); páw/píw light in weight (Ka +ppé, Sp ppéʔu, Cv pəpíw); psáws ground squirrel/síws groundhog, prairie dog; wáwp- back up/gʷílgʷep step back; ʔáwt- go with/ʔígʷ set out for (Ka eʔut follow, go behind); sáw- ask/sígw ask for (Ka séu ask for information, Ch sáwl- ask); kʷkʷátəna?/kʷí'ten mouse (Ka kʷékʷtəne?, Ch skʷatán?); sáʔstəm woman's brother-in-law,

man's sister-in-law/síʔstəm man's brother's wife, man's wife's sister
 (Me sáʔstəm sister-in-law); qʷáʔc/qʷíc warm (Ka qʷéc); pácaʔ/píceʔ
root-digger; qáck/qícč man's older brother (Ka, Sp qécč, Cv qéck);
 ʔác- iron, press, smooth/ʔíc smooth by rubbing; qʷáct/qʷíc(t) full
 (Ka qʷéc, Me qʷíc-); wánx war-dance/wínš dance war-dance (Ka wénš
dance war-dance); kwán-/kwín take, carry (sg. obj.) (Ka kwén- take
 (sg.), Cv kwín- take, Ch kʷaná- hold, take); xmánk like, love, want/
 xemínč like, love (Ka, Sp xaménč love, Cv xamínk like); ʔánaʔ/ʔíneʔ
ear (Ka, Sp ʔéneʔ, Cv ʔíneʔ); qqánaʔ father's mother, woman's son's
child/qíneʔ father's mother (Ka qéneʔ father's mother, Cv qáqənaʔ
son's child); kʷán-/kʷín try, test, examine (Ka kʷén); smánxʷ/mílʷ
smoke tobacco (Ka, Sp ménxʷ, Cv səménxʷ, Me smánxʷ); kt-máluxʷ/mílʷ
naked (Ch maléxʷ); (s)kaʔálp parent of deceased spouse/s-čéʔílup last
living relative; sqáltk/qílʷtč meat (Ka sqéltč body, flesh); qʷáləm
tamanous song/qʷílem song; qəlispál-/qəlispílem Kalispel (Ka qalispé);
 ʔál- shade/číʔ shadow, outline; skʷukʷá-ált/s-kʷu-kʷut-ílt fawn;
 máʔ-/mít rest (Ka méʔ); kát-/číʔ give (Ch čát-); xát- frighten/xít
fear (Ka xét fear, be afraid); spáʔəm/s-píʔəm bitterroot (Ka spéʔəm);
 sʔáʔuxən/s-xít-umšən leggings, trousers; ʔáyəm- easy/ʔíʔd-əm frail,
fragile; qʷáy- black/qʷíd make black, blacken (Ka qʷai, Me qʷáy black);
 ʔáyʔs trade/ʔíd exchange, barter (Ch ʔáyʔš- trade); ʔáʔe hot/ríʔ
glow, become red hot; qʷáy rich/qʷíy have plenty (Ka qʷéi have plenty);
 ʔáyʔ/qíy cleft, angle; cáyaʔ/cicíyeʔ woman's younger sister; qʷəcəwáyaʔ/
 qʷuqʷəcwíyeʔ chipmunk (Ka qʷqʷcuwé, Ch qʷaʔcəʔʔ); náʔ-/níč protect;
 náʔ- chase, scare, train/níč drive one animal with goad; ílák thin/

ʔíʔíʔ be thin slice (Ka ʔíáʔ thin, Sp ʔíéʔ thin, Cv ʔííʔ thin);
 spáksmən/s-ʔíʔs-mən pestle; cák woman's mother-in-law/nɛ+cíʔ man's
mother-in-law (Me ʔcícik mother-in-law); snák+xʷ/s-níʔ-+xʷ son-in-law
 (Ka sənécʔ+xʷ, Me sníkʔ+xʷ); wáx- live, dwell/wíʔ build, dwell; scáxt/
 s-cíʔt man's brother-in-law (Ka scéʔt, Me scíʔt); smákʷt/smíkʷt snow
 (Ka, Sp séméqʷət, Cv smíqʷt); yákʷ-/díʔʷ cross; xʷákʷ(t)/xʷíkʷ(t)
frost(y); ʔákʷən/ʔíkʷul fish eggs; páxʷ/ʔíxʷ bright, shiny (Ka ʔéxʷ);
 wənáxʷ/gʷuníxʷ true, right; táʔ- mash/tíʔ pound, hit (Ka teʔ pound);
 kʷáʔ-/kʷíʔ bite (Ka, Sp kʷéʔ, Cv kʷaʔ-); ʔáʔ- stick in, push in/qíʔ
stick to, wedge into (Ka ʔeʔ put, stick); táʔ- edge/tíʔ be close to
edge, border (Ka teʔ- arrive in a narrow place); wáh-/wíh dog barks
 (Ka uh); sháhəntk/s-ríhənt Canada goose; in suffixes -áks(ən)/-íʔs
hand, arm; -ákst/-íʔt hand, finger; -áʔps/-íʔps back of neck; -áʔt/
 -íʔt child; -áʔcaʔ/-íʔceʔ body; -aʔqáyʔt/-aʔqíʔt shoulder; -áʔxʷ/-íʔxʷ
house; -ánaʔ/-íneʔ ear; -ánk/-ínʔ belly, flat surface; -áp/-íʔ door
 (or -ép in Cr before back consonants); -askáyʔt and -áskit/-ísʔéyʔ
pharynx; -áʔkʷp/-íʔkʷəp fire; -áʔws flat surface, upon, across/-íʔws
between, together; -áʔwt/-íʔgʷt neglected, far; -áʔkʷ/-íʔkʷeʔ water;
 -áʔlus/-íʔlgʷes property; -áʔlxʷ/-íʔlxʷ skin, hide; -nwáʔlən/-ingʷíʔlən
something; -xán/-ʔín foot, leg (or -ʔén in Cr before back consonants);
 -áp foot, lower end/-íʔ bottom, after, behind; -ápəʔaʔ/-íʔpʔeʔ handle;
 -áʔst/-íʔst rock; -áʔp/-íʔp tree, plant (unstressed Cr has -ɛʔp) (these
 last four also occur with a in Cr before back consonants: -ápqən,
 -ápʔaʔqən, -áʔstqən, -aʔpáʔqʷ).

2. overlapping B5b above:

kxap-/čišíp chase; kamámaʔ/?ε-čímul pine needles; sqal'təmíxʷ man/
sqal'təmíxʷ man, husband (Ka, Sp, Cv sqal'təmíxʷ man, husband); kaʔtás/
čifʔ+es three (Ka, Sp čeʔt+é(s), Cv kəʔt+ís, Ch čáʔt+e); qʷaʔ-/qʷíʔ hollow
(Ka qʷéʔ a draw ?).

3. uncertain correspondences:

sxʷəlákən/s-xʷal-ísčən big buck.

F. Irregular, unexplained correspondences

1. Cm a, Cr e

laputáy/lebuté(m) bottle (Ka lepu·te, Me laputáy); sqʷáqʷəlqʷ/s-qʷéqʷ-
alqʷ prairie chicken (Cv sqʷáqʷəlqʷaʔ); máʔʷ- break, smash/méʔʷ smash,
ruin (Ka máʔʷ burst, break off, Cv máʔʷ- break); qʷáʔʷ drunk/qʷéʔʷ
be insane, drunk, foolish, irresponsible (Ka qʷeu(u) crazy, drunk,
Cv qʷáʔʷ- drunk).

2. Cm a, Cr t

kát-/čit (Cr form uncertain) brown.

3. Cm a, Cr u

sxʷaʔník/s-xʷúʔn-εč thornberry; xʷáy- run away, escape/xʷúy go (Ka
xʷúi go, Cv xʷúy- come, Ch xʷó·y gone, lost).

4. Cm a, Cr ɔ

tésxʷaʔ/tišsʔʔ sneeze (Ka tésʔʔ, Me tísxʷaʔ).

5. Cm a, Cr ə

cáncan/cáncən grasshopper; in suffixes -ámx/-əmš people.

PIS *i

A. Becomes Cm i, Cr e

before back consonants. p'íq-/p'éq white (Ka, Sp, Cv p'íq); str'íqxən/
s-tar'éq-šən mudhen (Ka stələqsšən, Cv stər'éqxən); líq-/l'éq bury (Ka
láq); t'íq^w-/t'éq^w explode, go off; c'íq^w- copper-colored/céq^w bright
pink; c'íq^w- skin an animal/céq^w butcher; pt'íx^w/tə-péx^w spit (Ka, Sp
pitáx^w, Cv spət'íx^wum); c'íx^w-/c'éx^w spark; k'íx^w-/č'éx^w pray (Ka čáu, Me
k'áx^w-); sxa^wíx^wsa^w?/wésxax robin; ?ítx^wa^w? black camas/?étx^we^w? camas
(Ka, Sp ?ítx^we^w? cooked camas, Cv ?ítx^wa^w? camas).

B. Becomes Cm i, Cr ɪ

1. when unstressed and not in the syllable preceding the stressed syllable and separated from the latter by only one intervening consonant (cf. Sloat 1968):

p'éx^wi^w?/p'áx^w-ɪ^w? cough, choke; qəlispál-/qəlɪspílɛm Kalispel (Ka
qalispé); yiləm'íx^wəm/yɪlm'íx^wəm chief (Ka, Sp, Cv iləm'íx^w(um)).

2. for indeterminate reasons (except for the first of these, the ɪ in the Cr forms alternates freely with ə):

p'ík bright, shiny, sparkle/p'ɪ^w (Cr form uncertain) shine, glitter;
w'íl-/wɪl- act unnatural, silly; yilám- run (pl.)/dɪlím gallop, go on
fours; miyá^w/mɪy'é^w too, very; smiyá^w/s-mɪyí^w coyote; sti^w?ícxən/
s-tɪyí^w-šən killdeer.

C. Becomes Cm i, Cr i

regularly in all other instances than the above. s'ípi^w?/s'íp-ɛy hide,
buckskin (Ka s'ípi^w? wear moccasins); c'íp-/c'íp pinch (Ka c'íp-); k'íp-/
č'íp pinch, clamp; +íp^w/+íp stripe (Ka +p- draw a line); wəlwəlím/
wəlwəlím iron, metal (Ka, Sp u·lu·lím money, iron); x'íw^w/x'íw raw,
uncooked (Cv x'íw^w); tk'íw^w-/tč'íg^wul climb; kk'íta^w?/č'ít-ɛ^w? near (Ka

číʔčeʔt close; xít/xít corrugated, marked; tuwít boy/tuwít youth,
young boy (Ka +tətəwít boy, Sp, Cv tətəwít boy); xəʔít- oldest/šíʔt
first, oldest; kʷətakʷíʔps/s-kʷət-kʷíʔt-ups flea; ʔístkw/sítsɪtkw
winter (Ka ʔístč-); pícxw-t disgust, bore/pícxw(t) become angry; kíʔc/
 číʔc arrive, reach (Ka číʔc- arrive); kíʔc-/číc find; skíʔcəʔuxw/s-číʔcuʔumš
Coeur d'Alene; sqʷqʷíʔcuʔxw snowshoe hare/s-qʷíʔc-əmš cottontail (Ka,
 Sp sqʷáqʷciʔ cottontail); síʔc-/síʔc blanket (Ka, Sp, Cv síʔcəm); tíʔc-
pitch, rubber/tíʔc gum; qʷín green/qʷín turn blue (Ka, Sp, Cv qʷín
green); pətʷínxw old woman/s-pətʷínuxw head of a nest, brood or house-
hold; tínx/tínš sinew (Ka tínš, Me tínx); síncaʔ/sínceʔ man's younger
brother (Ka, Sp sínceʔ, Cv síncaʔ); skínt Indian, person/s-čínt person;
 smínp horned toad/s-mémíʔep toad; mín-/mín rub; kín- scared, dangerous/
 čín dangerous (Ka čínt afraid for); s-t-k-kínt-ús/s-t-č-číntus pupil
of eye; cílkst/cíl five (Ka, Sp cíl, Cv cílkst, Ch célačs); qʷíl-/
 qʷíl cheat (Ka qʷíl); +íl-/+íl sprinkle; ʔaʔkʷíʔx/ʔeʔkʷíʔš shaman
 (Me ʔaʔkʷíʔx); ʔíʔən/ʔíʔən eat (Ka, Sp, Cv ʔíʔn, Ch ʔéʔn); kʷíʔx-
take apart, take off/kʷíʔ take off clothes; míʔ plain, clear/míʔ
make clear, know (Ka mii know, find out); píʔy- pinch, squeeze/píʔy
squeeze (Ka píʔeʔ press, squeeze); čík rough/číʔ prickly; wík(+)/gʷíʔc
see (Ka, Sp wíʔcəm, Cv wík-); níʔk-/níʔc cut with blade (Ka níʔc cut,
saw, Me níʔc cut); xík-/šíʔc miss a target; wawaʔíʔkw/wəw(ə)ʔ-íʔt poor-
will; kčíʔkwaʔ/číʔkw-əʔ left (side); tíʔkwaʔ/tíʔkwəʔ father's sister;
 síʔxw- scatter, pour dry substance/síʔxw pour solid objects or liquid
 (Ka síʔxw pour, spill liquid); číʔxw'číʔxw/číʔxw'cuxw fishhawk (Ch čéxw);
 yələmíʔxwəm/yɪlmíʔxwəm chief (Ka, Sp, Cv iləmíʔxw(um)); qqíʔxwəíʔx sucker/

qíxwɪlʃ fish; qíʔxw/qíʔxw stink, odor (Ch qéw-); miy-/míʔt middle;
 kí-/čín approach, get near (Ch čé- bring); stiʔícxən/s-tiyíč-šən
killdeer; skín/s-čím pika; susukrí/ʃisokrí Jesus Christ; in suffixes
 -aʔníwt/-ε+níw alongside; -a+qíxw smell/-á+qixw breath; -íkən/-íčn
back; -ícaʔ blanket, skin, hide/-íceʔ all around, all over; -cín/-cín
mouth; -qín/-qín head; -wíl/-gʷíl canoe, conveyance.

D. Irregular, unexplained correspondences

1. Cm i, Cr a

míxat black bear/s-maxíʔčən grizzly bear (possibly borrowed from Ka,
 Sp səmʔéʔičən grizzly bear; Cv səmʔéʔikən); ʔíqʷ- break eggs/táqʷ-s
egg or eye bursts (possibly not cognate); lúpiʔ birch-bark basket/
 lupay basket (in the Cm form the -iʔ corresponds to the Cr -ý, and
 the vowel has been lost).

2. Cm i, Cr ε

sxʷaʔník/s-xʷúʔn-εč thornberry (the stress difference probably accounts
 for this pair, the unstressed vowel in Cr becoming ε via PIS *ə or
 pre-Cr *i); pís/péstεʔ nighthawk (Me pás).

3. Cm i, Cr u

kʷəmkwímxcən/s-kʷum-kʷum-íwutšən rainbow (Cv skʷəmkwémmsən); qít-
hook/qʷut woven, knitted (possibly not cognate; Ch qá.t fishhook);
 čkwíkw/čékwukʷ elderberry (Me čkwékʷ); číxʷcíxʷ/číxʷcuxʷ fishhawk
 (Ch céxʷ); cəxəlícən marten/cəxyuʔcən mink (Cv cəxəlécənʔ marten)
 (the Cr form looks borrowed); carís/cálus kingfisher (Cr is borrowed;
 Cv cərəs). The presence of labialized consonants and unstressed
 vowels in several of these, and the fact that some are loan words

probably will explain these irregularities; perhaps unstressed *ə before or after a labialized consonant became Cr u.

4. Cm i, Cr ɔ

nís-/s-nós snot (Ka nós snotty).

5. Cm i, Cr ə

x^wiyápaʔ/?ɛ-cux^w-cux^w-wəyíʔɛʔ rosehips (possibly an epenthetic ə in Cr).

PIS *u

- A. Becomes Cm u, Cr ɔ before back consonants

q^wúm-qən/q^wóm-qən head (Ka, Sp q^wómqən hair on head, Cv q^wəmqín antlers); sx^wəlútqs cottontail/s-x^wəl-ótqən jackrabbit (Ka sx^wəlótqs prairie rabbit, Me sx^wəlútqs cottontail); púlpułqən/pól-pólqən thimbleberry; núx^wnux^w wife/nóx^wnox spouse (Ka nóx^wən^w wife).

- B. Becomes Cm u, Cr u regularly in all other instances than the above

lɛtkwú/lɛtkwú otter (Ka, Sp, Cv lɛtkwú); ʔx^wúp/ʔux^wup win, earn (Ka ʔex^wúp best in game); x^wúpt stupid, weak/x^wúp inefficient, careless (Ka, Sp, Cv x^wúpt lazy); lúp- dry/lúp dry, thirsty; məłqnúps/məłqanúps golden eagle (Ka, Sp, Cv məłqanúps); túplaʔ/túpeŋ spider (Ka túpəl, Ch túpaʔ); ʔatúpaʔ great-grandparent, great-grandchild/ʔúpyeʔ great-grandfather (Me ʔúpaʔ great-grandparent); lúpiʔ birch-bark basket/lupáy basket; púm brown, buckskin color/púm mouse-colored (Ka púm brown); túm- suck through pipe/túm smirk, mouth in sucking position (Ka ʔəm- suck); syúmcən rival/sdúmcən relative-friend; súm-/súm smell at, sniff (Ka súzum smell); stq^wsúmən/s-t-q^wəsúm weasel (brown) (Me

stq'wsumən); k'úw be gone/č'úw be absent, gone, missing, empty (Ka č'úu
absent, away); xəxə'nút/xəx'nut nine (Ka, Sp, Cv xəx'nút); lút not/lút
mischievous, not, negative; pk'út/pék'ut skin, hide; x'út/š'etut rock
 (Cv x'út); yəx'wix'wút'xən/yəx-yəx-útšən badger; sú't/sú't stretch;
 ʔús-/ʔús-ıłš dive (Ka, Sp, Cv ʔúst, Ch ʔésoʔ); puʔpuʔs-ánk mourn/
 pə-pús-inč sad, sorry, mournful; mús- feel/mús fumble, feel about;
 músəs/mús four (Ka, Sp, Me mús, Ch mós); cúś-/cúś rattle (Ka cóś);
 k'wús-t/k'wús(t) frisky, skittish, shy; k'wús- shrivelled/k'wús curly
 (Ka k'wús- curly); k'wúska- haunt/k'wúsč'eʔ haunt, ghost (Ka k'wúsč'eʔ
ghost); ʔaʔúsəʔ/ʔúseʔ egg (Ka, Sp ʔuʔúsəʔ, Cv ʔeʔúsəʔ); pús/pús cat
 (Ka, Sp, Cv pús); mətús/mátus kidney (Ch məts kidney, matós-s his
kidney); stúsəm/tús marrow; cəsəlúsaʔ/s-š-cəs-lúseʔ hail (Ka ssa·lúseʔ);
 s-t-k-kínt-ús/s-t-č-čintus pupil of eye; syəx'wús north wind, blizzard/
 yux'wús Cold; qayú's/qey'ʔus Cayuse; s'x'wúsəm/s-x'wúsəm foamberry (Me
 s'x'wúsəm); s-na-tús-mən/s-č-tús-mən eye; scpúʔs heart/ʔic-púʔs desire,
heart (Ka, Sp, Cv spuʔús heart, mind); q'wúct/q'wúc fat (Ka q'wúc(t));
 smúcxən mare/s-m-múčšən female animal, mare; tuʔún- that way/tuʔun
be in opposite direction; túnx man's sister's child/túnš man's sister's
child, man's brother's child; múl-/múl dip up (Ka múl go and fetch
water, Me múl- dip); súl(t)/súl(t) cold (Ka súl); k'wú+- borrow, lend/
 k'wúl- lend (Ka k'wú+- borrow, lend); x'wúl-/x'wúl drill a hole (Cv x'wúl-);
 stúl'caʔ/s-tún+č'eʔ mule deer (Cv stál'caʔsqáxaʔ mule); púl'ya/púl'yeʔ
gopher; məcú+t/mác-u+t pus (Me məcá+t); scú+əm bull, bull elk/cu+um
buffalo (Ka, Sp, Cv scú+əm bull); sq'wúʔ+ dust/q'wúʔ+ get dusty and
 q'wú+ be dusty (Ka, Sp, Cv sq'wuʔú+ dust); suyápənux'w/suyépəmš white

man (Ka suyápi, Me suyápíx^w); puy-/púy wrinkled (Ka púi); ?úk^w- haul, take, bring/?úk^w carry, bring (Ka ?úk^w take, bring, Ch ?ék^w- go after); yúk^wa? woman's elder brother/yúk^we? woman's younger brother; yu?yu?k^wú/ dú?k^w stingy (Ka yeyúq^we?); súk^w(t)- drift, float/súk^w-t float with current (Ov súk^wt drift); púx^w-/púx^w blow with mouth (Me púx^w-, Ch póx^w-); súx^w+ know, recognize/súx^w be acquainted with, know (Ka súx^w know, recognize); súx^w-ələx fish jumps/súx^w-lš fish dives scú?xən/ s-cú?-šən foot, leg (Ka, Sp scu?šín, Cv sco?xán); q^wíyu Oregon grape/ s-q^wéy-u? grape; cúw-/cú? hit with fist, punch (Ka cu?-); sk^wuk^wá-ált/ s-k^wu-k^wut-ílt fawn; laputáy/lebuté(m) bottle (Ka lepu·té, Me laputáy); in suffixes -úlux^w/-úləmx^w earth, ground; -úps tail, rump/-úps anus, anal region; -ús/-ús eye, face, fire; -lúp/-əlúp foundation, floor.

C. Irregular, unexplained correspondences

1. Cm u, Cr a

?úcqa?/?ácqe? go out (Ka, Sp ?ócqe?, Cv ?ácqa?); cúy?x/?ayx crawfish (Ka co?ixé? crab).

2. Cm u, Cr i

susukrí/?isokrí Jesus Christ.

3. Cm u, Cr ɔ

scúmcm/s-cóm-cóm-+t a boil; mú?t/mó?t smoke (Ka mo?ót, Ka, Sp səm?ót); pú?s thought/pós concentrate; spúct pimple, sore/s-póct scab, sore, excrement; húy visit, go next door/hóy cease (Ka hói quit doing, Me húy go); súlcas/sóltəs soldiers; susukrí/?isokrí Jesus Christ; lək^wu·sú/ ləq^wɔsú pig (Ka lk^wo·só pork, Me lək^wɔsú pig, Ch kwišú pig).

4. Cm ɔ, Cr ɔ

''mm'c/noc soft, tender (Ka təmm'óc, Sp nn'óc, Cv mm'ác).

5. Cm u, Cr ə

pu?pu?s-ánk mourn/pə-pús-inč sad, sorry, mournful.

PIS *ə

A. Becomes Cm i, Cr e before y, ý, d, or ʃ

q'wíy/q'wéd black; k'íya?/tédə? canoe (Ka, Sp k'iyé?, Cv k'íí?); q'íys-
balky, stubborn/q'édəm refuse, balky; s'tíya? hay, tall grass/s-tédə?
hay, grass, fodder (Cv s'tey?ú'íax'w grass); l'íy-/l'éʃ stab, poke, sting;
t'íy- scribble/t'éy make dirty marks, scribble; m'íyp learn, find out/
m'éy-p come to know; q'wíyu Oregon grape/s-q'wéy-u? grape; x'w'x'wíyt/
x'wux'w'éy? narrow (Me x'w'ox'w'áyat); s'ípi?/s'íp-éy hide, buckskin (Ka
s'ípi? wear moccasins, Me s'ípi? skin, hide); wi?-/g'w'éy finish; q'íy-/
q'éy spotted, make marks, write (Ka q'e?í write); kk'íya?/č'íč'éy? mother's
mother, woman's daughter's child (Ka č'íč'iyé? mother's mother, Ch
k'éy grandmother).

B. Becomes Cm ə, Cr a

1. before back consonants:

c'épq extend, patch, splice/c'ápq adhere, stick to; sq'wəs'w'ésa? baby/
s-q'w'ás-q'w'əse? child; t'ésq'w tired, bored/t'ásq weary with waiting;
ʔ'écx/ʔ'ácx look at, watch (Ka ʔ'ácəx look); m'əyám medicine/m'arím treat
for illness (Ka m'a·liyé, Cv m'əréms'tən medicine); t'ér- unravel/t'ár
untie, loosen (Ka taál untie, unwrap); k'ér-/č'ár cut with scissors;
k'ér-/č'ár swim (Ka č'aál-, Sp n'č'aríp, Cv k'arám); y'érk'w bend/y'árk'w curved,
crooked; x'w'érp/x'w'ár shake, tremble (Ka x'w'a·líp, Cv x'w'aráp); s't'ér'íqxən/

s-tar'eq-sən mudhen (Ka stələqsən, Cv stər'eqxən); tər'q kick, dance/
 tál'q touch with foot, step on, kick (Cr form probably borrowed from
 Ka; Ka təl'q kick, dance, Cv tər'q- kick); tər'- a row/tár' laid out in
trails, have trails; cəl'x- scratch/cál'x^w claw, dig claws in; s-q'wáq'wəlq^w/
 s-q'wéq^w-alq^w prairie chicken (Cv sq'wáq'wəlq^wa?); mé+q something going
down/má+q heavy convex object collapses; téq/táq touch (Ka tq-);
 stéqt/táq-t birds return from migration; céq- set down, set upright/
 cáq solid object stands upright (Ch céq- put down); séq- split/sáq'
gape, split in two (Ka sáq'- split); yéq-/yáq' file, sharpen, whet;
 t'éq-/táq' wide (Ka t'áq', Me, Ch t'éq-); t'éq^w-/táq^w slap (Ka tq^w-); p'éq^w-
spill dry substance/páq^w powder (Ka pq^w- scatter); k'x-/táx' fast,
swift (Ka, Sp, Cv k'áx(t)); yéx-/dáx' herd, chase; yéx-/j'áx' mark by
scratching; xəxənút/xáx'nut nine (Ka, Sp, Cv xənút); yəx'wix'wút'xən/
 yax-yax-út'sən badger; cəxəl'ícən marten/cəxyú'cən mink; p'éx'wí? choke,
cough up/páx^w-l?t cough; c'éx^w-/cáx^w promise; l'éx^w- pile rocks/láx^w
plural round objects lie; t'éx^wp-/táx^wp get away, escape; t'éx^wp'- leave
rapidly/táx^wp' rush; céf^w/cáR^w fringe (Ka co-., Cv cəf^w-); séx^wp drip,
leak/saR^w-p leak; in suffixes -əlqs nose, point/-alqs end, road.

2. for indeterminate reasons:

tép- thunder/táp shoot; xép- chew on, eat/šáp tear meat from bone;
 tém-/tám scorch, burn; t'écp a drop/tác one drop falls; sp'éc' soft
excrement/pác' squirt, defecate; sén/sán' tame, gentle, quiet (Ka sán-);
 mél'- warm (cf. má?l')/mál'(p) uncomfortably warm.

- C. Becomes Cm u, Cr a before or between labial or labialized consonants
 and before back consonants. Note that counterexamples to this and

the following set exist, raising a question as to the validity of this statement.

cu'wq- pull a nail out (sg.)/cáwq pull out solid object (Ka co'óq come off, break off); smamú'q'wm pile hay/máq'w plural objects lie, pile; mú'x'w- snow/má'x'w cover with snow (Ka m'x'wúp snow).

D. Becomes Cm u, Cr ε before or between labial or labialized consonants

k'wúpt/k'wépt spine, backbone; túm- rotten/tém'x'w tree is rotten; púw- drum on/p'éw drum on tin (cf. also Cr páw' drum on drum; Ka pu'm beat drum); x'wúk'w- clean, wipe/x'wék'w clean, sweep (Ka x'wúk'w clean); mú'x'wt/ mé'x'w-t laugh.

E. Becomes Cm a, Cr a irregularly

páyq/páq white (the Cr form is regular from *ə, but ablaut patterns indicate that Cm has inexplicably reformed this root; cf. p'íq-/p'éq white).

F. Becomes Cm ə, Cr ε regularly in all other instances than the above

x'wép-/x'wép unfold, spread, flatten out blanket (Ka x'wép spread); xəp'-/xép' button, fasten together, sew; yám- old/dém very old; yám-/ yém pin; kám-/čém a surface (Ka čəm-); yám not breathing/yém silent; həmp dissolve, worn out/Rém(t) melt, dissolve, waste away (Ka aamt melt away, Cv řamép dissolve); tém- cut/tém cut with scissors; spá'xəm/s-p'ítəm bitterroot (Ka spé'xəm); xəmán'/šémən' enemy (Ka, Sp šəmən', Cv xəmín'); ttáyəmt easy, weak, fragile/tíd-əm frail, fragile; q'wáləm tamanous song/q'wí'lem song; wép- hair/g'wép hairy, grassy; ccéma-/ cícém-ε? small (pl.) (Ka +ccíme?t); kám-/čém carry, take (pl. objects); kám'/čém' dark, darkness; xəwál/hən-šég'wɛl road, trail (Ka šu?šuwét,

Ch šəwt); sət-k- twist/sétč twist solid object; (t)xət- keep, take care of/šét take care of (Ka č-št- watch, guard); xət- surround/šét surround by enemy; kət- cut/čét cut off completely; čés- salvage, pick up (pl.)/čés collect by pecking, salvage (Ka čas- consume all of; kést/čés(t) bad (Ka čés-, Cv kést); qés-/qés scratch with nails; qésp past, long time, old/qésp long time, long ago (Ka qasíp late); xəst/xés good, well (Ka, Sp xəst(t), Cv xəst, Ch xəste); qwés blur, blurry, dim/qwés blurred, foolish; kəsən/čəsən head-louse; xəc-/xéc bet (Ka xc-); qəcp/qéc tight, shrunk, shrivelled; pəckəl leaf/pécčilə? leaf, cabbage (Ka pícč+ leaf, cabbage); təc-/téc flat objects lie (pl.); məc-/méc grease; kəc-/čéc long object lies (Ka číc); pən-/pén long objects lie (pl.) (Ka pín); tén/tén tight, stretched; kənp-/čénp clasp, encircle (Cv kənp-); wənt down, low/gwén below, deep, low; pən-/pén bend (Ka pín); xən-/šén flat object lies (Ch šaná's- lie on back); šəhəntk/s-ríhənt Canada goose; k'kwátəna?/k'wítən mouse (Ka k'wékwtene?); xəl-/xél lay evenly (Ka xəl- cover with planks or rugs); čəl-/čél stand (Ka číl, Ch čəláp stand up); səlp-/səlp spin (Ka sélp somersault); xəl|k- spin, turn/šélč move in a circle (Ka šəlč turn around); xwəl-/xwél live, alive (Ka xwulxwíl); qəl-/qél fresh; xəl clear/xél clear, bright, light (Ka xəl- daylight); təl-/tél soft object breaks (Ka təl break); təl-/tél tear, rip (Ka tíl); kwəl warm/kwél hot, sunny, warm (Ka, Sp kwíl-, Cv kwél); qəl'xw hang down/ qél'xw hook over, into (Ka qal'xw hang up high on hook); skwəl/s-kwu-kwél porcupine (Ka skwíl, Cv kwélqən); pət-/pét thick (Ka, Sp pát(t), Cv pát, Ch pát); tət-/tét straight, right (Cv tet+tét); stətəm/

s-té+əm boat (Ka, Sp stí+əm, Cv sté+əm); xé^l level, lose/šé^t beat in contest, level (Ka ší^l); k^wé^l- take out of/k^wé^t expose, be evident, plain; qé^lp top of a hill/qé^tp go up incline; pəl^k- turn over/pé^lč turn flat things over (Ka pəl^č turn, Ch pól^č- turn over); xəl^áx^w/xé^lex^w tooth (Ka, Sp xaléx^w); cəl⁻ stand/cé^l plural long objects stand up, project; q^wəl-/q^wé^l enkindle, light (Ch q^wál[?]+ pitch, light); məl^áyən/mé^le bait; qəl^lspəl-/qel^lspí^lem Kalispel (Ka qalispé); kə+ part, divide/čé⁺ separate, divorce, part; cək- hit by throwing/céč thunder strikes; cək-/céč count; xək^lxək/^téč^tč Brewer's blackbird; lək⁻ tie up/léč bind (Ka lč- tie); pəkəm bobcat/péčən lynx (Ch pačém bobcat); téx/^téš sweet (Ka, Sp tíš, Me téxt); sxk-ékst/séč-éčt black moss; kék-t walk on the road/čéš-íp accompany, walk behind; wəx-/g^wéš comb; ték^w quiet, silent, stuffy/ték^w stuffy; ték^wp/ték^w-p choke, smother; cək^w-/cék^w pull, drag (Ka ck^w-); pək^wəla[?]/pék^wle[?] ball; cək^w stiff, tough/cék^w stiff (as bones); péx^w- drift/péx^w wind-blown; téx^w- add a piece to/téx^w add to a store; ləx^wp get hurt/léx^w(p) hurt (Ka lx^wup hurt); ləx^w- make a hole/léx^w perforate, hole; téx^w-/^téx^w sew; xéx^w- dead (pl.)/^téx^w die, kill (pl.); lək^wt- far, wide/lék^w far (Ka lk^w- far, distant); nək^w-/nék^w-ε[?] one (Ka nk^wú[?], Ch nač-); ʔaʔúse[?]/ʔúse[?] egg (Ka, Sp ʔuʔúse[?], Cv ʔəʔúse[?]).

G. Irregular, unexplained correspondences

1. Cm ə, Cr i

tém blank/tím ground is clear of snow (Ka tiʔim melt); xəʔít- oldest/šíʔt first, oldest (Ka šiʔít first); mé^lk^w round/mí^lk^w round, whole, entire (cf. Cr mé^lk^w round, whole, entire; Ka mí^lq^w round); sé^l round/

sí| turn, cause dizziness; 'cétt cold/cí+ weather is cool (Cv 'cétt cold); stákc^w/s-tíčc^w red willowberry.

2. Cm ə, Cr e

yəx- herd, chase/déx round up (cf. Cr dáx drive many, round up animals); téx^w still/téx^w stop shaking; téx^wp-/téx^w stop; láí^w-/lé^w draw on, make fit (Ka láw-, Cv láí^w-, láí^w-); s^wx'əí^wx^wí^w/s-x'wér^w-x^wer^w fox (Ka x^wa·x^waá, Sp s^wx^wo·x^wó, Cv x^wí^wí|x, Sh x^wá|æx^w).

3. Cm ə, Cr ɪ

'tésx^wa?/tíšsó? sneeze (Ka 'təsó?).

4. Cm ə, Cr u

'tət/'tút dirty (Ka, Sp, Cv 'tí+); +ék^w-/+ú^wk^w remember (Ka +k^wu-).

5. Cm ə, Cr ɔ

'cém-/scóm suck (Ch 'cám- suckle); lək^wu·sú/|əq^wɔsó pig (Ka |k^wo·só pork, Me lək^wɔsú pig); 'cér sour, salty/cór sour (Ka cól salt, sour, Cv 'cér sour, cárt salt(y)).

6. Cm ə, Cr ə

k^wəl red, bay/k^wəl red (Ka, Sp, Cv k^wí| red).

PIS *ə (probably epenthetic)

A. Becomes Cm ə, Cr ɪ in free variation with ə before dentals and alveo-palatals

lətk^wú/|ətk^wú otter (Ka, Sp, Cv |tk^wú); péckəl leaf/pécčú|ə? leaf, cabbage (Ka píccč+ leaf, cabbage); qqíx^wəl^w sucker/qíx^wú|š fish; 'kək^wək/'técčúč Brewer's blackbird.

B. Becomes Cm ə, Cr u in free variation with ə in the environment of

labials and labialized consonants

scú+əm bull, bull elk/cu+um buffalo (Ka, Sp, Cv scú+əm bull); táwən-+ca?/
tíwun-+ce? doe (Ch tá·wn+ce); wənáxʷ/gʷuníxʷ true, right; ʔákʷən/
ʔíkʷul fish eggs; syəxʷmús north wind, blizzard/yuxʷmús Cold.

C. Remains elsewhere regularly in both Cm and Cr

təmənáy dead/təm-təmní corpse, dead (Ka təmtəmnéʔi corpse); sqaltəmíxʷ
man/sqíltəmíxʷ man, husband (Ka, Sp, Cv sqaltəmíxʷ man, husband);
stétəm/s-tétəm boat (Ka, Sp stí+əm, Cv stétəm); sáʔstəm woman's bro-
ther-in-law, man's sister-in-law/síʔstəm man's brother's wife, wife's
sister; sɣʷúsəm/s-xúsəm foam berry (Me sɣʷúsəm); yiləmíxʷəm/yílmíxʷəm
chief (Ka, Sp, Cv iləmíxʷ(um)); pəkəm bobcat/péčən lynx (Ch pačəm
bobcat); pətʷínxʷ old woman/s-pətʷínuxʷ head of a nest, brood, house-
hold (Me ptəwínxʷ old woman); cəsəlúsaʔ/s-š-cəs-lúseʔ hail (Ka
ssa·lúseʔ); qʷəcəwáyaʔ/qʷuqʷəcwíyeʔ chipmunk (Ka qʷqʷcuwé, Ch
qʷaʔcəʔ+); sɣʷəlákən/s-xʷal-ísčən big buck; ʔítən/ʔítən eat (Ka,
Sp, Cv ʔítən, Ch ʔétən); smúcxən mare/s-m-múcšən female animal, mare;
syúmcən rival/sdúmcən relative-friend; sápen/sípən daughter-in-law
(Me sípən); cəxəlícən marten/cəxyúʔcən mink (Cv cəxəlécənʔ marten);
kəsən/čəsən head-louse; spáksmən/s-píčs-mən pestle; s-na-tús-mən/
s-č-tus-mən eye; púlpułqən/pólpułqən thimbleberry; qʷúm-qən/qʷóm-qən
head (Ka, Sp qʷómqən hair on head, Cv qʷəmqén antlers); stríqxən/
s-tareq-šən mudhen (Ka stələqsšən, Cv stéréqxən); stiʔícxən/s-tiyíč-šən
killdeer; scúʔ-xən/s-cúʔ-šən leg, foot (Ka, Sp scuʔšín, Cv scuʔxán);
yəxʷixʷútʃən/yəx-yəx-útšən badger; kwəmkʷímcxən/s-kwum-kwum-íwutšən
rainbow (Cv skwəmkʷémmcxən); cáynəmən/cánmən Chinaman; məlqnúps/

məlaqnúps golden eagle (Ka, Sp, Cv melqanúps eagle); wəlwəlím iron,
metal/wəlwəlím money, valuables (Ka, Sp u·lu·lím money, iron);
 n-təl-ánaʔ/?ən-təláneʔ wolf (Cr form probably borrowed from Ka; Ka
 n'teláneʔ glutton); sxwəlútqs cottontail/s-xwəl-ótqən jackrabbit (Ka
 sxwəlótqs prairie rabbit, Me sxwəlútqs cottontail); in suffixes
 -ápqən/-ápqən back of head; -nwálən/-ingwílən something; -áxən/-áxən
arm.

Various generalizations can be drawn from this material apart from the vowel changes themselves. (1) It is the following, not the preceding, consonant that affects vowel quality. Labials and labialization may occasionally provide counterexamples, but no pattern of this was detected. Pharyngeals, however, can affect the quality of a following vowel. (2) Uvulars, r, and pharyngeals (back consonants) can be preceded only by a, e, or ɔ in Cr.¹⁵ (3) The ʕ/k, kʷ series may not be preceded by a or e in Cr. (4) Cm ə does not occur before y or y'. (5) Cr i is very infrequent before labials. (6) Cr u does not occur before the ʕ series in the same morpheme (but does occur before the kʷ series), uvulars, r, or pharyngeals, and Cm u does not occur before the k series, r, or pharyngeals. The significance of (5) and (6) is not clear. It is not unlikely that PIS *k k' x were labialized after *u to *kʷ k'ʷ xʷ, thus eliminating these three consonants from this environment. This does not explain the lack of r and pharyngeals after u in Cm, however (but this may not be a significant lacuna, since none of these are very frequent consonants in any case).

4. A word about consonant correspondences is in order. There are

few consistent differences between the consonants of Cm and Cr. PIS *k k̥ x have remained in Cm, and regularly become č č̥ š respectively in Cr (as well as in Sp and Ka). Cr has merged PIS *ʔ with *t̥, whereas Cm has kept them distinct. Cr has four voiced stops, but whether these are original or derived is uncertain; no pattern has been detected to indicate how they might have developed. Cr b corresponds to Cm p, although only one non-borrowed cognate pair is known (the sound is quite uncommon in Cr in any case). Both Cr d and ȝ correspond to Cm y; Cr ȝ is infrequent. Cr gʷ corresponds to Cm w. (Cr is the only IS language with voiced stops, and they contrast there with the resonants to which they correspond in the other IS languages; the correspondences in the other languages are the same as in Cm.) Cm has developed two more pharyngeals than occur in the other languages; PIS *ʕ and *ʕʷ have split there into voiced-voiceless pairs: Cm ʕ ʕʷ ʕʷ ʕʷ.

Other Cm-Cr consonant differences are sporadic. The most striking, perhaps is Cm p/Cr č. This correspondence has been found in only three pairs of cognates (pa'án/č̥el tree bark; pún-+p/ʔač̥ač̥n-á+qʷ juniper; t̥p-/t̥l̥č̥ protrude), but is more widely known elsewhere in Salish. Since Cr č̥ is known to have developed from PIS *k, a Cm k/Cr p correspondence would not be inconceivable (the č̥/p correspondences do not seem to be entirely one-way wherever they occur), and the pair Cm wərwarká+p tall sunflower/Cr sgʷárpəm flower might be an instance of this (in the Cm form the initial wər- is, of course, a reduplication of the root wark-, and -á+p is a lexical suffix meaning plant; in the Cr form s- is the common Salish nominalizer, and -əm is a common suffix called causative by Reichard).

Occasional Cm l/Cr n correspondences occur: stúl'ca?/s-tún+çé? mule deer; túpla?/túpən' spider. The reverse correspondence also occurs: smán'xw/ míl'xw smoke tobacco; ʔák'wən/ʔík'wu | fish eggs. Other consonant correspondences are even more random, such as Cm kwú+- borrow, lend/Cr kwú | - lend (although morphophonemic alternations between l and + in any given language are known to occur). There are several instances of velars differing as to front-back, rounded-unrounded, glottalized-unglottalized (or combinations of these); differences in glottalization of other consonants, especially resonants; differences in presence or absence of ʔ; and differences in presence or absence of γ, especially adjacent to i.

5. The above reconstructed vowels shed interesting light on IS ablaut. The only place this phenomenon has ever been discussed in print is in the works of Gladys Reichard (Vogt mentions a type of ablaut, but this is quite a different matter), particularly her article "Composition and symbolism of Coeur d'Alene verb stems."¹⁶ However, in this article, Reichard treats this ablaut (which she never calls by that name) as "vowel symbolism," and is unable to draw either convincing or consistent conclusions. Most of what she considers the secondary forms she believes are causatives or resultatives (the "primary meaning. . . indicates that a thing has quality or is in a given condition automatically or without an outside force or agent"; the secondary meaning is that "the subject has been made or caused to act or to assume a condition by an outside agent."¹⁷ But there are other pairs which are antonyms, and do not fit her causative-resultative category. As to the vowels, she says that ä u ʏ a (these are her symbols; her ä equals our ε, and her ʏ should be ə) occur as primary

vowels and i a ɔ (ɛ should be included too) as secondary, paired as follows:
 ɛ-i, ɛ-a, a-i, a-ɔ, u-ɛ, u-a, ə-i, u-ɔ.

Upon close examination, this all becomes quite confusing, but we believe that relatively simple and systematic explanations are possible. First of all, many of the pairs of words Reichard gives are probably not related at all. With CVC as the predominant root pattern, pairs differing only in the vowel are highly likely, and no relationship between them need be sought. Such pairs as tɛkʷ be stuffy - tɪkʷ smell out, detect, xʷɛc pass by - xʷɪc crop hair, cɛm press hard on - cɪm be pointed (like a lemon) are probably not related. Others, such as tɛkʷ one lies - tɪkʷ be old, or tɛc flat objects lie - tɪc one drop falls she herself questions. But there are plenty of pairs which surely are related, indicating that ablaut has been a viable process in IS.

Secondly, the causative-resultative meaning assigned to these pairs is probably not relevant. At one point, Reichard says that the secondary forms "generally take äts- made so,"¹⁸ and it is most likely this prefix, rather than the vowel change, that gives the causative-resultative meaning. With this out of the way, we can say that ablaut creates forms with a derived or secondary meaning, but see no need to try to assign concrete meaning to the process. This avoids problems with the so-called antonyms.

Finally, the classes of ablaut types are needlessly complex. Most of the types given by Reichard were illustrated by only a few pairs of words; by eliminating those pairs that are unlikely to be related, we can eliminate a-ɔ as a type altogether. Figures for the other pairs (keeping all that can be thought to be related, even by an active imagination)

are: ε-i 27, ε-a 11, a-i 5, u-ε 2, u-a 1, ə-i 2, u-ɔ 3. We believe that even this number of ablaut types is greater than that present in PIS, the increase (and realignments) being a result of sound changes discussed above.

5.1. At this point, it will be convenient to have the data before us. The following are those pairs given by Reichard (retranscribed into the notation explained and used in the earlier part of this paper) which we will allow may be related (some, of course, may not be, nor should this list be considered exhaustive for Cr).

(1)	u	ε
	pux ^w <u>blow with mouth</u>	pεx ^w <u>winnow, wind blows</u>
	q ^w us <u>be gathered by sewing</u>	q ^w εs <u>be shrivelled</u>
(2)	i	ε
	piy <u>press</u>	pεy <u>milk</u>
	piłč <u>turn eyes inward with pain</u>	pεłč <u>turn flat object over</u>
	min <u>smear grease</u>	mεn <u>rub</u>
	miy <u>be made clear</u>	mεy <u>be evident</u>
	miy <u>be dignified</u>	mεy <u>arrange</u>
	mit <u>rest</u>	mεt <u>persons lie</u>
	wilč <u>make roll</u>	wεłč <u>roll</u>
	tix ^w <u>gather, collect</u>	tεx ^w <u>add to store</u>
	tilp <u>split off portion</u>	tεl <u>soft object or piece breaks off</u>
	tim <u>tear cloth from bolt</u>	tεm <u>slide scissors through fabric</u>
	nik ^w <u>be tribe</u>	nεk ^w <u>be one</u>
	sitč <u>stomach</u>	sεtč <u>second stomach, paunch</u>

sil	<u>become turned, cause</u>	sel	<u>turn swiftly</u>
čil'	<u>dizziness</u>	čel	<u>cough up</u>
čid	<u>be nauseated</u>	čed	<u>be shady</u>
gwiš	<u>shade (tr.)</u>	gweš	<u>be weir</u>
kwiť	<u>take off (as clothes)</u>	kwet'	<u>comb</u>
qit	<u>be exposed</u>	qet	<u>be awake</u>
qwiť	<u>wake up</u>	qweť	<u>be aware</u>
qwil	<u>have pity for</u>	qwel	<u>poor, pitiable</u>
qwid	<u>light fire</u>	qwel	<u>kindle</u>
qwiť	<u>blacken</u>	qwed	<u>be black</u>
tip	<u>be preserving</u>	qwet	<u>have endurance</u>
titp	<u>make stripe</u>	tep	<u>mark</u>
titp'	<u>plural jump</u>	etp	<u>one leaps</u>
titkw	<u>cause to jerk</u>	etkw	<u>jerk</u>
tiť	<u>be even with edge</u>	et'e(n)	<u>be there, opposite</u>
rwit'	<u>break into smile</u>	rwet's	<u>smile</u>
tetiť	<u>spotted</u>	teť	<u>make dirty marks, scribble</u>
(3) a		i	
pac'	<u>squirt</u>	pic'	<u>squeeze, push</u>
cas	<u>fine</u>	cis	<u>slender</u>
xat	<u>fear, be afraid of</u>	xit	<u>hurry at</u>
xwat	<u>dart</u>	xwit	
(4) e		a	
peq	<u>be white, bleached</u>	paq	<u>be whitened</u>
leq	<u>bury</u>	laq	<u>search for, unearth</u>
texw	<u>it stops moving</u>	taxw	<u>cause to stop, bring to a stop</u>

	per ^h k ^w <u>nail</u>	par ^h k ^w <u>pierce</u>
	ler ^h <u>skate</u>	lar ^h <u>be slippery</u>
(5)	i	ə
	k ^w il <u>red</u>	k ^w əl <u>be red</u>
	q ^w in <u>make blue</u>	q ^w ən <u>be blue</u>
(6)	u	ɔ
	q ^w uʔ+ <u>dust</u>	q ^w ɔʔ+ <u>make dusty</u>
	cum <u>suck in air</u>	cɔm <u>suck on</u>
(7)	a	ɛ
	paw <u>drum on drum</u>	pɛw <u>drum on tin</u>
	maɪ <u>boil (tr.), scald</u>	mɛɪ <u>boil (intr.)</u>
	tam <u>dampen</u>	tɛm <u>be damp</u>
	xac <u>be queer (cause of staring)</u>	xɛc <u>stare</u>
	q ^w al <u>be black from burning</u>	q ^w ɛl <u>become ripe, cook, burn, char</u>
	tax ^w <u>draw on, wear</u>	tɛx ^w <u>draw together, sew</u>
	tag ^w <u>sell</u>	tɛg ^w <u>buy</u>

Because of the vowel changes which occurred between PIS and Cr, we account for the Cr pairs listed above as follows: (1) u would alternate with ɛ (from PIS *ə) in the two forms given. (2) The large class i-ɛ is a merger of PIS *a-ə and *i-ə, as can be seen by comparison of primary forms with Cm, when available. Both PIS *a and *i would most commonly become Cr i. That both origins are present in this list is shown by the Cm/Cr pairs q^wáy- black/q^wíd blacken, q^wíy/q^wéd black (Cm i from PIS *ə before y); k^wíʔ- take apart, take off/k^wít take off clothes, k^wéʔ- take out of/k^wét expose, be evident, plain. We cannot at present tell what the

source of all these pairs is, i.e., whether they are from PIS *a-ə or *i-ə since we do not have cognates for all the forms. (3) The Cr a-i alternates do not fit our PIS pattern. (4) The e-a pairs are also properly from PIS *i-ə: *i becomes Cr e and *ə becomes Cr a before uvulars. (5) i alternates with ə in two forms. This is not expected because PIS *ə should become Cr ε. These both have phonetically [ʊ]; however, even this is not explainable at this time. It is possible that the forms are borrowed. (6) The three alternates with u-ɔ do not fit our scheme either. ɔ in Cr developed from *u before r, uvulars and pharyngeals, except in a very few roots. (7) A problem also arises within our final group, a-ε. The a of these forms is unexplained--if original, it would have been expected to have become i. This is the only group of any consequence which we have not been able to explain. But as stated above, the ablaut variant of primary *ə is not clear. It is possible that this large class of Cr pairs is the reflex of this missing ablaut type.

5.2. A somewhat superficial check of Cm data confirms these hypotheses about PIS ablaut. Precisely the expected pairs occur. Since Cm retains the reconstructed PIS vowels except PIS *ə before y, we would expect Cm a-ə, i-ə, and u-ə, plus a/i/u-i before y. We find the following:

(1)	a	ə
	ˈcárt <u>salt</u>	ˈcér <u>sour, salty</u>
	ˈtáq- <u>stretch a hide</u>	ˈtáq-t <u>wide</u> (questionable pair)
	ˈkám- <u>end of, finish</u>	ˈkém- <u>pass, go by</u>
	ˈnáʔq <u>rot, rotten meat</u>	ˈnéq <u>rotten meat or fish</u>
	ˈspácən <u>spider-web, rope</u>	ˈspéc <u>excrement (soft)</u>

qácp- <u>curl up (as a snake)</u>	qécp <u>get tight, shrivel, shrink</u>
qá'kp <u>get on top (of a mountain)</u>	qé'kp <u>the top of a hill</u>
h'á'k- <u>animal chews</u>	h'é'k- <u>gnaw on (as a mouse)</u>
sá'x ^w <u>melt</u>	s'é'x ^w <u>drip, leak</u>
tá'x ^w <u>still</u>	t'é'x ^w <u>be still, silent</u>
xár <u>spread flat</u>	s-xér-lup <u>rug (-lup floor)</u>
xát- <u>lift</u>	xétət <u>raising</u>
(2) a	i
páyq <u>white</u>	píq-t <u>white horse</u>
máya- <u>tell</u>	míy- <u>clear, plain, know</u>
q ^w áy-ən <u>blacken</u>	q ^w íy <u>black</u>
h'áym- <u>angry</u>	h'íy- <u>growl</u>
(3) i	ə
k'ít- <u>break string or wire</u>	k'át- <u>cut, chop</u>
k ^w í'k- <u>take apart</u>	k ^w é'k- <u>take out, take off</u>
l'íq- <u>break string or wire</u>	l'éq- <u>cut crops</u>
l'ík ^w <u>rosary</u>	l'ék ^w - <u>string fish, string beads</u>
s'íq-əmən <u>splitting maul</u>	s'éq- <u>split</u>
t'íl- <u>break or pull apart (bread)</u>	t'él- <u>break or pull apart (bread)</u>
(4) u	ə
púx ^w - <u>blow (on)</u>	p'éx ^w - <u>(snow) drifts</u>
yú'w- <u>untie</u>	y'é'w- <u>untangle</u>

There is another ablaut pair in Cm, é-ǎ, the status of which is not clear. It seems to be developed for a different reason from the above, all of which are derivational in some general manner. Pairs with é-ǎ are

also derivational, but the source of the ablaut does not seem to be derivation, but rather the result of it. In all cases of Cm é-ǎ, stress is shifted to another element in the word (usually a suffix): kén'-en up against - kán'-qín pillow (-qín head); təc'- hit with a stick or whip - tacc'-álpš hit on the head (-álpš back of neck). Cm ə has an ambivalent status in any case, as implied above (section 4); unstressed ə is most commonly epenthetic. This being the case, there may be an effort to avoid unstressed ə in positions where it would not occur epenthetically, and when resulting from a stress shift away from a root with stressed ə. Cm é-ǎ would then be a later development than the other ablaut types.

5.3. Further confirmation is obtained from those few ablaut pairs retrievable from Vogt's Kalispel dictionary. Only seven or eight such pairs can be found, and these represent either PIS *a-ə or *i-ə:

(1) *a	*ə
cáw'- <u>wash</u>	céw'- <u>wash</u>
káč'- <u>stick out</u>	kəc'- <u>come forth, rise</u>
qwác'- <u>hat; make warm</u>	qwéc'- <u>warm</u>
xás'- <u>"good dress" ?</u>	xés <u>good</u>
xwál'- <u>make a movement, step</u>	xwél'- <u>abandon, leave</u>
yál'- <u>round circle, hole</u>	yélš'- <u>crowd around in a circle</u>
(2) *i	*ə
míy'- <u>know, find out</u>	méy'- <u>show, teach, tell</u>
píq <u>white</u>	paq-, paʔáq <u>fade, get white</u>

5.4. Most of these forms can be traced back to PIS (with the aid of cognates from other languages) to show that PIS probably had a simple,

consistent ablaut system. It would appear that each of the three primary vowels *i u a* had *ə* as their ablaut variant. The ablaut variant of primary *ə* is unclear. Any of the four vowels could also vary with zero, perhaps secondarily to the *ə*-grade, and only when stress had been shifted away from the root of the word.

But we find no clear evidence which would indicate what the ablaut grade of PIS **ə* might have been comparable to PIS **a-ə*, **i-ə*, and **u-ə*. One possible conclusion from this might be that PIS **ə* was secondary, and always derived by ablaut from one of the other vowels, **a*, **i*, or **u*. This is questionable, however, because of the large number of forms which must be reconstructed with PIS **ə*, and for which no ablaut source is extant. We must leave the solution to this problem to further and broader comparative work.

Another ablaut grade does exist, however: zero.¹⁹ Again with shift of stress away from the root, vowels often disappear altogether: (since this is a very common phenomenon, only a few examples are given) Cm cé+t cold - c+-úlux^w cold country; kwárən apply yellow paint - kw-r-áyq yellow; +éqt wide - +q-álq^w wide board; léxt fast - lx-átk^w rapids, fast water; pék^wt big around - p^wk^w-áp big rope; tés stiff, hard - ts-ápca? hard, poorly-tanned leather; Cr hənšég^wel road - hənšəšg^wí little road, path; ?ése two - ?e?sí little two; həncéx^wut stream - həncəcx^wút streamlet. One might take this as the ablaut grade of PIS **ə*, but since all vowels are affected, one would have to assume an intermediary *ə*-grade in each case. There is no evidence for this, and it is both unlikely and unnecessary. There is also a lengthened grade of PIS **a*, **i*, and **u* (but probably

significantly, not *ə), which offers no particular complications, and may be at least partly inflectional rather than derivational, and which will not be discussed further here.

5.5. To summarize ablaut in PIS, then, we present the following chart showing the various ablaut grades and their developments into Cm and Cr. The different possibilities of ablaut vowels are given for Cm and Cr, but conditioning factors are not repeated here. Vowel grades indicated by number are (1) lengthened, (2) normal, (3) ə, (4) zero.

PIS				Cm				Cr			
1	2	3	4	1	2	3	4	1	2	3	4
a•	a	ə	∅	a•	a	ə/i	∅	a•/i•	i/a/ɛ	ɛ/a	∅
i•	i	ə	∅	i•	i	ə/i	∅	i•	i/e	ɛ/a	∅
u•	u	ə	∅	u•	u	ə/i	∅	u•	u	ɛ/a	∅
	ə		∅		ə/i		∅		ɛ/a		∅

In several cases the difference between the normal and ə-grade forms will be leveled out by vowel changes, and the possibility of ablaut in the first place can only be adduced by semantic variability of a form or by comparison with other Salish languages.

FOOTNOTES

1. The research which provided the data for this paper was made possible by grants from the Phillips Fund of the American Philosophical Society and from the University of Kansas for work on Columbian, and from the National Science Foundation, the American Council of Learned Societies, and the University of Washington for work on Coeur d'Alene. This assistance is gratefully acknowledged. We also wish to thank Dr. James E. Hoard of the University of Kansas for his many helpful discussions and suggestions.
2. E.g., Boas, Reichard, Swadesh.
3. The following abbreviations will be used: CS - Coast Salish, IS - Interior Salish, PIS - Proto-Interior Salish, Cr - Coeur d'Alene, Cm - Columbian, Ka - Kalispel, Sp - Spokane, Cv - Colville, Me - Methow, Li - Lillooet, Th - Thompson, Sh - Shuswap, Fl - Flathead, Ch - Upper Chehalis.
4. A few of these come from field notes of Kinkade. The vast majority are from Hans Vogt, The Kalispel Language, Oslo (1940), and Hans Vogt, Salishan Studies: Comparative Notes on Kalispel, Spokane, Colville, and Coeur d'Alene, Oslo (1940).
5. As given in Clarence Sloat, A skeleton key to Reichard's Coeur d'Alene transcriptions. *Anthropological Linguistics* 10:5.8-11 (1968).
6. The Kalispel Language, p. 14.
7. Franz Boas and Herman Haeberlin, Sound shifts in Salishan dialects. *IJAL* 4.127 (1926).

8. Ibid.

9. Ibid., p. 128

10. Gladys A. Reichard, Coeur d'Alene, Handbook of American Indian Languages, Vol. III, New York (1938), pp. 560-568.

11. Part V, IJAL 25 (1959), pp. 250-252.

12. Epenthetic is used here with its usual meaning. Most simply, epenthetic ə is one which would not appear in a morphophonemic or reconstructed form, and which can be (synchronically) predicted by a few simple (low-level) rules. Epenthetic ə is most commonly found before resonants, but not exclusively so. To eliminate it entirely from transcriptions might seem arbitrary, since it is qualitatively the same as other ə's, but seems structurally valid, or even necessary. Most unstressed ə's can be thus eliminated, but some seem to be necessary. Further study is needed to clarify this problem fully.

13. In Kinkade's opinion, the first of these two alternatives is the simpler. The vowel alternations that seem to be relevant to this point are not the ablaut discussed below (involving semantic changes), but vowel differences under reduplication. But this is a special problem which needs separate investigation. The great amount of apparent irregularity in reduplications cannot be quickly summarized for inclusion in this paper. However, one possibility is that PIS reduplications treated vowels in three ways: (1) any full vowel alternating with itself, regardless of stress (i.e., either or neither vowel may have been stressed); (2) any full vowel, stressed or unstressed alternating with *ə (unstressed) in either order; (3) any full vowel, stressed or unstressed, alternating with zero in

either order. This provides 11 vowel patterns in PIS reduplication (disregarding stress), which could yield as many as 30 patterns in Cr, excluding the many duplications that occur from Cr vowel changes. This theory will account for vowel patterns in Cm reduplication and for all in Cr reduplication except those with a vowel alternating with Cr ə (unstressed). Because of the overwhelming symmetry and regularity which otherwise occurs, I suggest that these exceptions in Cr are innovations made since PIS times.
(MDK)

14. Upper Chehalis forms are from Kinkade's field notes.

15. Cf. Reichard, Coeur d'Alene, p. 561:203. But in her 1959 work, several forms are given with ε before uvulars; only one Cm cognate was found for these, and that was Cm l'q- bury, indicating that at least some of this group should have Cr e rather than ε.

16. IJAL 11.47-63 (1945).

17. Ibid., p. 49.

18. Ibid.

19. Cv. zero as an ablaut grade in Ch, in Kinkade, Vowel alternation in Upper Chehalis, IJAL 32.343-349 (1966). Most other ablaut in Ch is too fragmentary to be of much use in our comparisons here.